connection (10) by way of a fuel pressure line (14) to the fuel valve (16), via which the fuel travels at least indirectly into a combustion chamber of the engine, the first fuel pump (6) delivers the fuel into the fuel line connection (10) with a delivery capacity that is changed as a function of an operating condition of the engine.

REMARKS

Claims 1-25 remain in this application.

The indication of allowability of claims 14, 15, 20 and 24 is greatly appreciated.

PREMATURE FINAL

In the Office action of June 5, 2001, claim 12, even though not indicated to be allowable, was not rejected over prior art. This fact was pointed out in the response filed on October 5, 2001.

In the final rejection of January 14, 2002, claim 12 was rejected for the first time using the references Ishida, Fujino et al, Yoshiume et al, and Cummins et al.

Between these two actions, claim 12 was amended to correct the problem the examiner pointed out, that "the motor" does not have antecedent basis. The amendment of October 5, 2001 went on to state that since there was no prior art rejection of claim 12, it is assumed that claim 12 will now be indicated to be directed

to allowable subject matter.

It may be tempting to say that the claim 12 was not understandable prior to the amendment, but such argument is refuted by the fact that claim 13 had exactly the same language, and the examiner was able to understand claim 13, and saw fit to reject claim 13 in view of prior art in the Office action of June 5, 2001.

Thus, clearly it was improper to make the rejection of January 14, 2002 final, as for the first time we now have claim 12 rejected on prior art.

ELECTION OF SPECIES CONSIDERATIONS

Claims 21, 22, and 25 have been withdrawn from consideration as not directed to the elected specie.

At the time of the original election of species, applicants submitted that all claims read on the elected species. The examiner disagreed, saying that claims 21, 22 and 25 do not read on elected figure 2. This position taken by the examiner still is not correct.

The examiner's attention is politely directed to the specification at page 24, lines 11-15, which says that in figure 1, 30 is a fixed throttle valve, and in figure 2, 30 is an on-off valve. Both types of valves **intrinsically provide flow restriction** that varies with the amount of flow through them. Claims 21 and 22 recite that the valve device has a flow

resistence that depends on the through flow of the fuel passing through it.

Thus, as broadly as claims 21 and 22 state the feature, these claims are generic to figure 2 as well as to figure 1, as the recitation in these claims could be an on-off valve. An on-off valve as shown in figure 2 will have a flow resistence that will vary depending on the amount of fuel flowing through it, even if the valve remains open. Thus, clearly, claims 21 and 22 can be read on the figure two embodiment.

Moreover, the recitation in claims 21 and 22 changes the structure from what is recited in claims 19 and 20 only very slightly.

Even further, claim 25, which the examiner has said is not readable on the elected specie, recites that the valve device is an electrically switchable on-off valve.

PRIOR ART CONSIDERATIONS

In the Office action, the examiner, rejected claims 1, 7, 17, 18, 19 and 23 under 35 USC 103 as unpatentable over Ishida in view of Fujino et al, claim 16 over Ishida in view of Fujino et al and Learman et al, claims 2-6 and 8-11 over Ishida in view of Fujino et al and Yoshiume et al, and claims 12-13 over Ishida in view of Fujino et al, Yoshiume et al and Cummins et al.

Thus, all of the prior art rejections depend on the combination of Ishida and Fujino et al providing a valid

rejection of claim 1.

This rejection, however, presents some problems. In the Office action of January 14, 2002, the examiner has finally made it clear that he is reading the reference to Ishida such that element 46 is the first pump and 100 the second pump.

Looking at Ishida in this manner, the amount of fuel which gets delivered to piston 100 does vary, although it is not a situation where the pump 46 has a "delivery capacity that is changed as a function of an operating condition of the engine." The delivery capacity of the pump 46 of Ishida does not vary, 46 is a constant volume pump which pumps a constant volume of fuel, and if there is any excess fuel it is allowed to escape through spill valve 64. Thus, this portion of Ishida does not meet the claimed limitation of "a delivery capacity (from first pump (6)) that is changed as a function of an operating condition of the engine."

Further, reading booster piston 100 as a pump is also not a fair reading of Ishida. All that booster piston 100 does, is, via hydraulic means, boost the pressure from line 110 to a higher pressure in line 44. This is not the same as recited in applicants' claim 1, wherein the second pump is an actual physical pump.

It is applicants' contention that Ishida's structure 100 is not a pump. To be a "pump", the structure 100 of Ishida would have to have a mechanical apparatus which converts mechanical

energy into fuel pressure. This is how a pump is defined on the attached page 1 of "Fluid-Power Controls" by John J. Pippenger and Richard M. Koff, published by McGraw-Hill Book Company, Inc. in 1959.

The examiner has added the reference Fujino et al to Ishida to make a rejection. But neither Fujino et al nor Ishida teaches the very essence of applicants' invention, that a first, variable pump supplies the second pump according to the engine parameters.

None of the cited art provides the operation of a first variable pump supplying a second pump.

Applicants' inventive concept of supplying the maim pump with a varying quantity of fuel from a variable first pump, eliminates a delay in supplying sufficient fuel at very low engine speeds, such as at startup; and also eliminates an oversupply of fuel at running speeds of the engine. This makes for a very efficient use of the fuel pump, and also the fuel.

As recited in applicants' specification on page 2, line 23 through page 3, line 15, the much quicker, and more variable adaptation of the fuel supply system of applicants' invention by making the first pump a variable pump, matches the fuel supply to the operating conditions of the engine much better. This provides a substantially better fuel supply at the correct pressure and quantity when compared to the prior art, including that of Ishida and Fujino et al.

The examiner has also used the references to Learman et al,

Yoshiume et al, and Cummins et al in various of the rejections. But again, none of these references teach a first variable pump supplying a second pump.

The patent to Yoshiume et al does teach an electric motor driven fuel pump which is under the control of the engine control unit 20. Via the output from engine control unit 20, the motor that drives the fuel pump is adjusted to deliver the desired quantity of fuel. But this is not the same as applicants' claimed invention. Adding this teaching to the combination of Ishida and Fujino et al still does not make applicants' claimed invention obvious. For this still does not provide any teaching of supplying the second fuel pump with a varying quantity of fuel from a first variable pump, as recited in applicants' claims.

Learman et al also teach an electric motor driven fuel pump which is under the control of the engine control unit. Via the output from engine control unit, the motor that drives their fuel pump is adjusted to deliver just slightly more than the desired quantity of fuel. Again, this still is not the same as applicants' claimed invention. Nor does adding this teaching make applicants' claimed invention obvious. Adding this teaching still does not provide any teaching of supplying the second fuel pump with a varying quantity of fuel with a first variable pump, as recited in applicants' claims.

Cummins et al also teaches an electric motor driven fuel pump which is under the control of the engine control unit. The

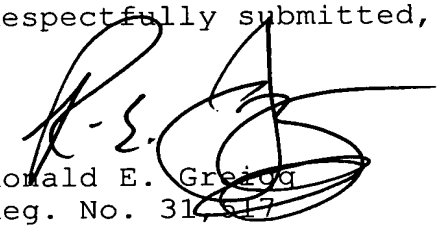
output from engine control unit to the motor that drives the fuel pump is adjusted to deliver the desired quantity of fuel. But this is not the same as applicants' claimed invention, nor does adding this teaching make applicants' claimed invention obvious. Once again, this still does not provide any teaching of supplying the second fuel pump with a varying quantity of fuel with a first variable pump, as recited in applicants' claims.

It is therefore believed that Ishida in view of Fujino et al, even with the addition of Learman et al, Yoshiume et al, or Cummins et al, does not teach or make obvious the claimed subject matter.

The Commissioner is authorized to charge a fee of $110.00, for a first month extension of time, or any other necessary fees in connection with this communication, to Deposit Account Number 07-2100.

Reconsideration and allowance of the claims are courteously solicited.

Respectfully submitted,



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Attachment, pages of "Fluid-Power controls"

Appendix, claim 1 marked up to shown the changes made by this amendment:

1. (Twice Amended) A fuel supply system for delivering fuel for an internal combustion engine, comprising a fuel tank, a first fuel pump (6) for pumping a variable pumping capacity, a <u>mechanically driven</u> second fuel pump (12) [driven by a mechanical connection from the engine], and at least one fuel injection valve (16), wherein the first fuel pump (6) delivers the fuel from the fuel tank into a fuel line connection (10) and the second fuel pump (12) delivers the fuel from the fuel line connection (10) by way of a fuel pressure line (14) to the fuel valve (16), via which the fuel travels at least indirectly into a combustion chamber of the engine, the first fuel pump (6) delivers the fuel into the fuel line connection (10) with a delivery capacity that is changed as a function of an operating condition of the engine.